

APQ-56 Improvement Program

3/13/57

1.11 Resolution Problem -

STAT

Presently, the resolution of the recorder is not equal to that of a 0.1 us transmitting and receiving system. As a result of the use of very slow range sweeps it has been demonstrated that there is very little defocusing due to yoke field shape changes vs time. The experiments to date on the O2 T/S recorder show that with it functioning normally and with the focusing voltage at the best possible value for the CRT the spot or line size is close to .003" dia. at the favored portion of the sweep and no greater than .004 at the poorest focused part of the sweep. It is to be concluded that a major improvement in resolution can be brought about only by the use of a different CRT.

2.11 Recorder Cooler -

STAT

1) Permanent type cooler - Field Mod Kit #1 covering this item has been written and given to the S R Service Section 3/8. All applicable Change Orders covering the break-in of this cooler in production units have been written. They are: 73064, 72983, 73095, 73096, 73127, 73177, 73211, 73295, 73177. Break-in point was set at #14.

2) Quick Type Cooler - Field Mod Kit #1 also applies to this cooler. The FMK that applies to Sets 04 and 05 have been given to E & S.

3) Camera Cooling - Field Mod Kit #2 covering this item has been given to S. R. Service Section.

4.5 RF High Voltage Power Supply -

STAT

The R.F. Coils arrived incomplete; therefore, the coils were returned (hand-carried). The supplier completed the coils and made the necessary alterations that two days' time permitted. The ideal R.F. Coil, which we desire, will allow the oscillator tube to operate at a cool temperature; however, even though the ideal coil could not be obtained at present, the present coil will suffice for prototype equipment.

The 10 KV Capacitors are having trouble being released from their manufacturers. The latest shipping date was 3/9.

6.11 P. E. Cell -

STAT

Three P. E. Cell Test Sets are being built and tested to establish the sensitivity of P. E. Cells. All sets have been completed. The correlation between is still being checked and further work is now being performed for correlation between sets and bulbs. One meter received from calibration appears to be in error, but a further check is being made to determine if this is correct. It has been found that it may also be necessary to reconnect the transformer in certain sets to obtain proper current for certain bulbs.

- 8.11 Noise Figure - [] STAT
No further reports.
- 11.11 Quick Disconnect Waveguide - [] STAT
Parts are now on hand to permit modification of all Time-Shared equipments. This change will be included in the Mod Kit to incorporate maggie and klystron fins since the simultaneous drawing hangers are involved. These drawings are now being checked in Drafting. (Same as last report).
- 12.11 Pulse Cable Connectors - [] STAT
Five sets of pulse cable connectors of a new design have been received. Their adaptability to APQ-56 system has not yet been determined.
- 13.11 AGC - [] STAT
Design a new AGC that will be less susceptible to stray pick-up and interference. No progress due to Friedmann's absence.
- 14.8 Trigger Circuit Redesign (Overload at turn-on) - [] STAT
The major components of the trigger generator now in use have been incorporated into a blocking oscillator design which appears to meet the requirements called for in the thyratron specs.

As soon as a thyratron can be found that will overload at turn-on, this circuit will be tested to determine if it will operate satisfactorily in the set. Work on the line type circuit is being held up pending outcome of these tests.
- 15.10 Maggie Stem Pressure Seal - [] STAT
Tests of a seal system using an "O" ring and a clamp ring have proven satisfactory. Drawings for parts to be manufactured will be released in one or two days. Orders have been placed for purchase items. Field work required to make this modification involves removing of the maggie and loosening of the penthouse, drilling three blind holes in the top of the R.F. Head plate, and pressing three Rosan press nuts into the holes using a small arbor press.
- 17.7 Wide Band Receiver - [] STAT
The Pre Amp and Post Amp are ready for system test. The Video Amp now has 12 MC Bandwidth and sufficient gain. The range mark injection and faults in assembly are the remaining problems.

19.7 Receiver Design -

STAT

The design criteria necessary to obtain the desired transient response and a suitable amplitude characteristic has been tentatively formulated. The main effort for the next week will be guided towards the determination of the proper intermediate frequency and the design of a suitable input network for the pre-amplifier.

Sylvania and Microwave Associates have been contacted about the supplying of reverse mixer crystals. The procurement of reverse crystals will simplify and ease the design of the input network.

20.5 Pulse Width -

STAT

Hand tube modulator tests have been suspended since it was found that the original trigger circuit needed improvement when using the 6799 magnetron. This improvement will be effected in several days and the tests can then be continued.

21.6 Pulse Width (quick fix) -

STAT

Received high voltage capacitors which were overdue. All components are now being installed in O2 system for a trial run.

22.3 Resolution Test Set -

STAT

A means for measuring recorder resolution is needed in the field. Eight Resolution Test Sets will be built for the Time Shared System by S R using commercial type construction. Potted power supplies have been ordered. Schematic is 80% complete.